Aware

Aware is published by NOAA's National Weather Service to enhance communications within the Agency and with the emergency management community.

Winter 2005-2006

Climate, Water, Weather

Extreme Weather Emphasizes Need For Increased Public Awareness

By Dennis McCarthy, Director, Office of Climate, Weather and Water Services

We are putting this issue of *Aware* together during the transition period from autumn to winter and at the end of the 2005 hurricane season. November has certainly provided a great example of just how active a seasonal transition month can be, producing three significant tornado outbreaks, wildfires in southern California, heavy lake-effect snow in the eastern Great Lakes, and our 25th named Atlantic tropical storm. The year broke records for the most hurricanes.

Yet another tropical storm formed in the Atlantic to start December. As I am writing this article, a strong winter storm is taking shape, prompting a tornado watch in the Southeast and winter storm warnings in the Middle Atlantic states. Needless to say, the season has provided more examples of practices to emulate and challenges on which to focus.

When an F2 tornado damaged a manufacturing plant in western Tennessee near the town of Paris on November 15, a well-rehearsed action plan limited the impact on plant employees to two minor injuries. Hearing a tornado warning on NOAA Weather Radio All Hazards, plant officials activated the plant's warning system to get all employees to interior shelters before the tornado struck.

Nine days earlier, however, 22 people were killed in a tornado outbreak in the lower Ohio Valley. One F3 tornado devastated most of a mobile home park on the southeast side of Evansville, Indiana, while most residents were sleeping.

As we move into winter and the special challenges this season brings, we must continue working together to educate and promote awareness. Soon we will certify the nation's 1000th StormReady community. While this is a truly significant accomplishment, success stories from communities already certified remind us how critical it is to make expansion of this program one of our highest priorities for the rest of the nation.

Inside Aware

Two-Prong Plan Helps Improve Air Quality

By Ted Buehner, WCM, NWS Seattle/Tacoma, WA
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Air quality may not be as exciting a weather element as hurricanes, tornadoes or winter storms, but poor air quality impacts our most basic requirement of life—the air we breathe. Many people suffer during poor air quality days.

In collaboration with Washington state clean air agencies and EPA Region X, NWS offices in Seattle and Spokane, WA, and Pendleton and Portland, OR, made two changes to their air quality weather support for the 2005-06 winter season.

The first change was for NWS to create an air stagnation advisory product that would be issued before an extended stagnant period. This product gives clean air agencies authority to ask the public to voluntarily reduce burning and increase car pooling *before* a stagnant period begins. These public appeals will be issued through press releases. The second change NWS made is to initiate a daily conference call with all parties involved in mitigating poor air quality to discuss the stagnant weather pattern and reach a consensus on how to minimize adverse impacts. The first conference call would occur several days before a potential stagnant period is expected to begin and calls would continue until the event ends.

In mid-November, these NWS offices had their first test of the revised air quality plans. Beginning November 17 or 18, NWS expected a strong ridge of high pressure to develop over the Pacific Northwest and create a stagnant weather pattern. In response, the team held its first conference call on November 15. The consensus was for NWS offices to issue air stagnation advisories with wording to reflect expected conditions in a few days. Clean air agencies then issued press releases asking the public to voluntarily reduce burning and other emissions. Area press reported the story extensively and the public responded positively.

The team held conference calls each morning. By November 18, it was clear the stagnant weather pattern would be extensive. Strong temperature inversions below about 2000 feet trapped cold air and fog—dense in some areas—in most of the state's valleys and lowlands. In eastern Washington, NWS Spokane and Pendleton also issued dense fog and freezing fog advisories when the fog, combined with freezing temperatures, producing slippery conditions and poor visibility.

The stagnant air remained through November 24 when the stubborn high pressure aloft shifted inland and conditions improved, first in western Washington and later eastern Washington. How successful were the revised air quality plans? The results speak for themselves.

Even though the stagnant weather pattern persisted for about a week, the proactive actions taken before and throughout the event resulted in mitigating what could have been a hazardous air pollution episode. Air quality sensors showed pollutant levels reached only into the moderate category with just a few sensor sites reaching unhealthful for a limited time. The public responded positively and air quality sensors measured the results. EPA pollution standards were not exceeded.

Air quality staff members noted that the weather briefing and consensus on actions gave all parties a clearer idea of what actions each were going to do and all with just one well-placed phone call. In addition to the four NWS office, participants in these conference calls included:

- EPA Region 10
- Washington State Department of Ecology, Health (Asthma Div.) and Natural Resources
- Local clean air agencies in cities such as Yakima, Puget Sound, Spokane and Olympic, WA

Aware

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The Bottom Line—Air quality hazards were minimized during this extended stagnant period thanks to the efforts of all parties involved. Communication was improved through the revised NWS air quality weather support plans. But the real winners in this trial were the millions of people who breathed cleaner air during this extended stagnant weather pattern. ❄

Aviation News

Free Aviation Safety Tips Available in *The Front*

By Melody.Magnus, Editor, The Front
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The NWS Aviation Branch released its third 2005 edition of *The Front* in November. *The Front* offers aviation weather tips to a broad community of NWS partners. Users may download and reprint this report at no charge. Articles in this edition include:

- FB Winds: New Name, Old Product
- Tips for Recognizing Reliable, Accurate Weather Sources
- Meteorology Behind the TAF: Area Forecast Discussion

To be notified when *The Front* is released, email **nws.postmaster@noaa.gov**. To download the November edition, go to **http://weather.gov/os/aviation/front.shtml**. If you have article suggestions or comments, contact **Michael.Graf@noaa.gov**. ❄

Digital Services

NDFD Milestone Reached in December

By Andy Horvitz, Lewis Kozlosky and Glenn Austin
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Weather impacts Americans on a daily basis. The challenge of providing pertinent and timely weather information is being addressed, in large part, through the implementation of the National Digital Forecast Database (NDFD).

December 1 marked the one year anniversary of NDFD implementing its Initial Operating Capability (IOC). Throughout 2005, NWS shifted a number of forecast elements to operational status. NDFD was expanded in June with the addition of Apparent Temperature and Relative Humidity experimental forecasts. The following are some of the major milestones of the past 12 months:

- **December 2004: NDFD IOC: Maximum Temperature, Minimum Temperature, and Probability of Precipitation elements made operational. The following elements remained experimental:** Temperature, Dewpoint, Weather, Quantitative Precipitation Forecast, Snow Amount, Significant Wave Height, Sky Cover, Wind Speed and Wind Direction.
- **March 2005:** CONUS offices add Temperature, Dewpoint, and Weather to operational suite
- **June 2005:** NDFD expanded to include experimental Relative Humidity and Apparent Temperature forecasts. Puerto Rico and Hawaii gain six operational forecast elements.
- **September 2005:** Guam gains six operational forecast elements.
- **December 2005:** Wind Speed and Wind Direction made operational for CONUS, Puerto Rico, Hawaii and Guam.

As of December 14, the following forecast elements are operational for CONUS, Puerto Rico, Hawaii, and Guam:

- Maximum Temperature
- Minimum Temperature
- Probability of Precipitation
- Temperature
- Dewpoint
- Wind Speed
- Wind Direction
- Weather

NDFD goals for the next year include providing experimental forecasts for Alaska and determining which of the remaining experimental forecast elements should become operational for other parts of the country. These experimental elements include:

- Sky Cover
- Quantitative Precipitation Forecast
- Snow Amount
- Significant Wave Height
- Relative Humidity
- Apparent Temperature

A summary table of NDFD grid status can be found at: http://www.weather.gov/ndfd/resources/oper_status_table.pdf.

Products effectiveness is determined via a technical review and user comments. The comment period has been closed for Sky Cover, Quantitative Precipitation Forecast, Snow Amount and Significant Wave Height. NWS is accepting comments on Apparent Temperature and Relative Humidity until December 15. To provide comments on these two elements, go to the NWS Customer Survey for Official and Experimental Products/Services: http://weather.gov/survey/nws-survey.php?code=ndfd-grids.

NWS continues to work on ways to improve NDFD forecasts. Our staff are looking at service enhancements such as developing new experimental elements for hazardous weather outlooks.

NDFD's goal is to make NWS forecast information relevant, easy to use and easy to understand. Success for NDFD will be measured not only by how accurate the forecasts are, but also by how well the integration of forecast information (e.g., snow, wind and temperature forecasts) help citizens, first responders and others keep abreast of critical weather conditions expected this winter season and throughout the year. ❄

HazCollect Approaches Operational Acceptance Test

By Herb White, NWS Dissemination Services Manager
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The last phase of the HazCollect Development Test and Evaluation ran from Dec. 1-14. Earlier testing of HazCollect produced correctly formatted test messages, but more testing of infrastructure, message creation and geocoding is needed. NWS also transmitted a "live" message, end-to-end, through operational and test systems.

The next step is the Operational Acceptance Test (OAT), delayed until January 2006. For the OAT, selected NWS offices nationwide will work with local emergency managers to send test (and actual, if any) emergency messages using test versions of the Disaster Management Interoperability Service (DMIS) Desktop Toolkit.

HazCollect will be available nationally through DMIS starting in late March when the Federal Emergency Management Agency distributes a scheduled update. Emergency Managers and government staff who want to use HazCollect to broadcast messages over NOAA Weather Radio All Hazards or other NWS dissemination systems must first register as a DMIS user and will establish a DMIS Collaborative Operations Group (COG). NWS plans to start HazCollect registration about February 1 on the HazCollect website noted at the end of this article.

HazCollect will be a one-stop shop for collection, relay and distribution of non-weather emergency messages (commonly known as Civil Emergency Messages) to the NWS dissemination infrastructure, other national systems such as DMIS and to the Emergency Alert System.

HazCollect will use features of DMIS, such as automated user authentication and authorization. When HazCollect becomes operational next spring, emergency managers will be required to use the Non-Weather Emergency Message input tool provided in the DMIS Toolkit. NWS and FEMA are writing specifications for the web services interfaces within the DMIS Open Interoperability Platform. These specifications will allow commercial vendor systems' input into HazCollect. The goal is to distribute the specifications in time to allow commercial vendors to be HazCollect "capable" by late 2006.

For updates on HazCollect, go to: http://weather.gov/os/hazcollect. To register with DMIS, go to http://dmi-services.org. Click on "Register" in the left menu. ❄

New Radar Web Displays Coming in February

By Bob Bunge, NWS Office of the Chief Information Officer
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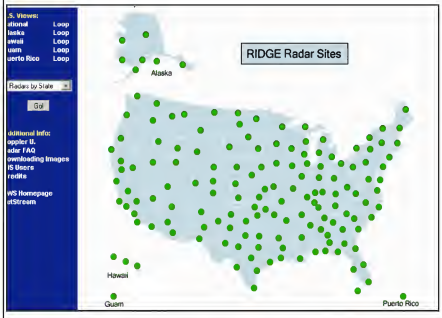
On January 31, NWS will switch to new WSR-88D radar web displays, now in a testing and public comment stage. Users can see the new displays at http://www.srh.noaa.gov/ridge/.

The displays focus on features designed to enhance the public's ability to save life and property. Functions include the ability to turn different data layers on and off, removing city labels, political boundaries, and other factors masking radar data. NWS has added topographic data, more roads and rivers to help viewers better locate their position on the displays.

Also plotted are polygons for Tornado, Severe Thunderstorm, Flash Flood and Special Marine warnings. "The polygons allow users to visually see where their local NWS forecaster is most focused on a possible threat as well as the radar data," said Paul Kirkwood, NWS



Users can see the new displays at http://www.srh.noaa.gov/ridge/.

Southern Region Headquarters Staff and Radar Integrated Display with Geospatial Elements (RIDGE) program director.

RIDGE also offers advanced users the ability to download radar imagery and import it into geospatial software displays, including some handheld wireless devices.

"We also focused on increasing the timeliness and reliability of the imagery with RIDGE," said Kirkwood. "This positions NWS to be able to move RIDGE imagery into an operational environment in the future."

During testing this summer, NWS received more than 24,000 comments on RIDGE pages. "The vast majority of the comments were very positive" said Kirkwood.

To ease the move from the old radar system to the new one, a version of radar called RIDGE-Lite, which requires no java or javascript, will be available. The move to the new displays should be seamless.

In the near future, NWS plans to add radar products that include echo tops, Vertically Integrated Liquid (vil) and Layer Reflectivity Maximum (LRM). NWS will shift from ftp service to Internet access for images.

The new pages also will allow mouse-over capability, which allows many users to toggle this feature to autodisplay an image without reloading the page. ❄

NWS Proposes Terminating IWIN Website in Favor of New Options

By Bob Bunge, NWS Office of the Chief Information Officer
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After a run of a decade, NWS is considering termination of the current IWIN website now online at http://iwin.nws.noaa.gov/. The majority of the current IWIN web pages have been reproduced on newer systems at http://www.weather.gov/view/. If IWIN is terminated, most IWIN pages will be automatically redirected to the newer system. NWS is exploring the termination for a number of reasons:

- Improving efficiency by running fewer systems
- Replacing older technology
- Allowing better focus of resources to other information technology projects and sliding usage of the website.

Additionally, all products available on IWIN are also available on other websites, including newer web pages that organize NWS products in a fashion similar to IWIN.

More details are available at http://www.weather.gov/inlr.php as well as links to suggested replacement websites. Also, from this page NWS will be accepting comments on the proposed termination until January 31, 2006.

The target date for decision on whether to terminate IWIN in favor of other available NWS sources for similar information is March 1, 2006. Earliest possible termination date for IWIN is July 1, 2006.

VTEC Operational for Nine Products

By Art Kraus, NWS Dissemination Services
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On November 1, the Valid Time Event Code (VTEC) became operational in seven long-duration event-driven products and two Routine Marine forecasts. The change affects all CONUS WFOs as well as San Juan, PR. The new Operational VTEC products are:

- Winter Weather Messages (WSW)
- Non-Precipitation Weather Messages (NPW)
- Fire Weather Watches and Red Flag Warnings (RFW)
- Flood Watches and Flash Flood Watches (FFA)
- Coastal and Lakeshore Hazard Messages, including High Surf Advisories (CFW)
- Watch County Notification (WCN)
- Watch Outline Update (WOU)
- Coastal Waters Forecasts (CWF)
- Great Lakes Nearshore Waters Forecasts (NSH)

The WOU product is centrally prepared by the Storm Prediction Center. The rest of the listed products are prepared using the WFO Graphical Hazard Generation (GHG) software.

Corrections to the VTEC Directive

In November, NWS staff updated VTEC Directive (NWSI 10-1703) to fix a typo and two coding errors. A corrected version is online at: http://www.nws.noaa.gov/directives/. Details of the corrections have been posted on the NWS VTEC website http://weather.gov/os/vtec.

TCV Product Evaluation

The Tropical Cyclone Product for VTEC (TCV) is an experimental product issued during the 2005 Atlantic Hurricane Season. TCV was issued whenever Tropical Storm or Hurricane Watches/Warnings were in effect for the Atlantic and Gulf Coasts of the United States, Puerto Rico and the U.S. Virgin Islands. Based on user and staff feedback, the product may become operational for 2006, or changes may be made with additional testing required. Look for a final decision by late winter.

VTEC Testing in 2006

The next phase of VTEC testing and implementation will occur in 2006. The focus will be on event-driven Hydrologic products (Warnings, Advisories, and associated follow-up statements) and on Marine Weather Statements that do not followup Special Marine Warnings. Once the testing dates are firm, they will be announced in Public Information Statements and posted on the NWS VTEC website: http://weather.gov/os/vtec.

Changes to Look for in 2006

- Additional Phenomenon Codes are anticipated, one being for Extreme Wind (EW) events associated with the eyewall of a land-falling hurricane.
- The VTEC Correction policy may be changed, with the hope of making the use of the COR action code uniform across all products containing VTEC.
- Additional VTEC Action Code is being considered for long-duration events which temporarily end (or are temporarily upgraded), but then reappear in one portion of a forecast area, while continuing over that period in another portion of the area. ❄

NWS Database of Changes to Environmental Information Services Now Available Online

By Wendy Levine, NWS Strategic Planning and Policy Office
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NWS now offers an online database that tracks and gives details on proposed changes that could affect its partners and customers. NWS has developed processes to implement NOAA's Policy on Partnerships in the Provision of Environmental Information. The NWS policies:

- Recognize the public interest is served by the ability of all sectors (private, academic and government) to provide diverse services to meet varied user needs
- Commit NWS to consider entities in all sectors and consider the effects of its decisions on its users to better serve the public interest and advance the nation's environmental information enterprise
- Commit NWS to communicate with, seek comments from, and consider the views of affected parties before initiating, substantially modifying, altering the method of provision, or terminating significant environmental information services

To meet these goals, NWS is providing a publicly accessible database of proposed changes to NWS information services. This database provides the public one-stop shopping for information on experimental products and changes to NWS products, services and dissemination systems. The database:

- Identifies the service
- Describes the proposed change(s)
- Lists the name of a person to contact for information
- Notes the beginning and ending dates for the comment period
- Indicates the final decision concerning the proposed change.

NWS encourages all of its customers and partners to review this database (updated monthly) at http://weather.gov/infoservicechanges. ❄

EMWIN Makes Several Strides Forward

By Bill Johnson, Team Leader for the EMWIN Transition
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NWS has completed three key steps in the Emergency Managers Weather Information Network-N (EMWIN-N) transition:

- Conducting additional tests on the EMWIN-N prototype receive system
- Issuing a Request for Information (RFI) to prospective vendors
- Completing work on the Low Rate Information Transmission (LRIT) encapsulation of the EMWIN data stream.

NWS completed the additional tests in early November at the National Environmental Satellite, Data and Information Service (NESDIS) Command and Data Acquisition Station in Wallops, VA. The tests prepare for the eventual launch of the GOES-N satellite and the subsequent EMWIN-N test period. The tests were successful, and the results are available on the EMWIN

website. Unfortunately, problems have delayed the GOES-N satellite launch until early 2006 due to problems with the Delta IV launch vehicle. NWS will host another user-vendor conference following a successful GOES-N field test of the EMWIN-N prototype. The timing and details will be announced on the EMWIN website once they become firm.

The EMWIN website includes specifications, hardware schematics, test results and demodulation/decoding software for the EMWIN-N prototype receive system. This information will allow interested vendors or amateur radio builders to construct their own receivers in time for the field test.

To attract prospective manufacturers of receiving systems, NWS has posted an RFI on FedBizOps. The RFI specifies EMWIN-N specifications and prototype design. To date, NWS has received expressions of interest from more than a dozen vendors. We are also exploring some additional avenues in an effort to involve more of the potential manufacturing community. Find information about the RFI at http://iwin.nws.noaa.gov/emwin/emwin-n-rfi.htm.

In a related effort, NESDIS and NWS have completed the LRIT encapsulation of the EMWIN data stream. EMWIN data is now available from the LRIT operational broadcast. This NESDIS system is the replacement for the WEFAX transmission.

To keep abreast of new developments in the EMWIN transition, visit the EMWIN website at: **http://iwin.nws.noaa.gov/emwin/index.htm**. ❄

GOES Satellite

Partnership Helps Place Weather Radios in Schools

By Kevin Lynott, NWSHQ, Acting National WCM Manager
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A large NOAA Weather Radio All Hazards (NWR) distribution in October resulted in approximately 16,000 public alert radios reaching public schools across the country. The Department of Homeland Security partnered with the Department of Commerce and the Department of Education to keep schools prepared and informed about serious threats in their area. All public schools across the country are scheduled to receive public alert radios in the next two years.

NWR is an "All Hazards" radio. Therefore, the radio can issue alerts for events such as hazardous material spills, child abductions and severe weather. Many schools, from elementary up to high school, now have the capability to keep users informed of real-time hazards as well as up-to-date weather information from their local NWS Forecast Office. For either weather related or other types of incidents, the more prepared a school is for an emergency, the safer students will be.

A letter describing this new program also was sent to each of the 16,000 schools. To view the letter and other program information, go to: http://public-alert-radio.nws.noaa.gov/index.html ❄

"Turn Around Don't Drown™" Poster Now Available Online

By Larry Wenzel, Hydrologic Services Division, Larry.Wenzel@noaa.gov

Awareness of the NWS campaign, "Turn Around Don't Drown™" (TADD) continues to gain ground across the country. An increasing number of TV weather personalities routinely are using the catchy phrase when flooding is in their forecasts.

To build on that awareness of the hazards associated with driving a vehicle through flowing water, the NWS Office of Services has posted a color poster in both a web suitable jpg (15 mg) and a high resolution printable tif (150 mg zip/tif) in the TADD Toolbox.

NWS partnered with the American Association of Motor Vehicle Administrators, the Department of Transportation and the Federal Alliance for Safe Homes to create this color poster.

To download the poster or other TADD related safety material, go to http://tadd.weather.gov. ❄

Flood Safety Awareness Week Offers Resources for Emergency Managers

By Larry Wenzel, Hydrologic Services Division, Larry.Wenzel@noaa.gov

The second annual Flood Safety Awareness Week has been set for March 20-24, 2006. Each weekday will highlight a different element of the hydrology program. Specifics for each day are still being worked out. A new feature this year will be a "Flood Related Phenomena" day highlighting flooding caused by:

- Tropical cyclone inland waters
- Snowmelt
- Ice jams
- Dam breaks
- Debris flow

The Turn Around Don't Drown™ official highway sign

Staff are developing a website with resource information. For more information, go to http://www.floodsafety.noaa.gov/. ❄

NWS Evaluates Performance During Significant Weather Events: Katrina, Rita

By Wayne Presnell, NWS Performance Branch
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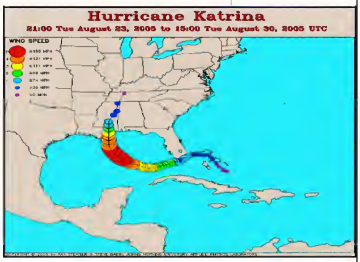
After severe weather events with significant or high impact, the National Weather Service assesses its performance to find ways to improve. There have been several such weather events during the last 2 years. NWS conducts two types of assessments – Post Storm Data Acquisition (PSDA) reports and Service Assessments.

After a significant weather event, NWS forms a PSDA team. This teams of experts collects perishable data on damage to structures and inundation areas. These experts then infer wind speed, magnitude and classification of the event. Teams have already completed PSDA reports for Hurricanes Katrina and Rita. They are online at http://www.weather.gov/os/data/stormdata.shtml. Teams currently are working on reports for Hurricane Wilma and the tornado outbreak in Illinois and Kentucky in early November 2005.



Path of Hurricane Katrina August 23–30. Purple indicates tropical depression stage; dark blue, tropical storm stage; light blue, Category 1 hurricane stage; green, Category 2; yellow, Category 3; orange, Category 4; and red, Category 5.

Service Assessments

NWS also produces Service Assessment reports on high impact weather events. Service Assessments are much more extensive evaluations of NWS performance during a significant weather event. They highlight best practices and recommend improvements. A tremendous amount of research goes into these assessments.

In December, NWS published its Service Assessment Report on a Tsunami Warning Event on the West Coast of the U.S. in June 2005. Because tsunamis are not common along the U.S. coastline, the event's focus is on the warning and dissemination process.

In addition, staff are near completion of a Service Assessment for Hurricane Charley, which struck in August 2004. Hurricane Charley was a Category 4 hurricane that moved onshore in southwest Florida causing nearly $14 billion in damage and 10 fatalities.

Hurricane Katrina had a devastating impact on the nation. Katrina was the single costliest hurricane in U.S history, causing over $200 billion in damage and claiming over 1,000 lives. A service assessment team was formed by NWS to evaluate its performance during the event. The team has completed data gathering, is working on an initial draft of the report, and plans to brief the NWS Director and Corporate Board in January 2006.

Hurricane Rita's impacts on the U.S. were nowhere near that of Katrina. However, Rita was a category 5 at one time and affected areas along the Gulf Coast near where Katrina had its greatest impacts. As a result, the NWS is working with the Claes Fornell International (CFI) Group in surveying NWS customers and partners affected by Rita. CFI focuses on analyzing and improving customer satisfaction. The NWS plans to write a report based on the results of the survey. All completed service assessment reports can be viewed at: http://www.weather.gov/os/assessments/index.shtml. ❄

NWS Awareness Publications To Be Back in Stock in 2006

By John Simensky, NWS Outreach Staff
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Some of the most heavily used NWS publications have been running low or are out of stock due to budget cuts. The good news is that most will be replenished in time for the upcoming severe weather season. Publications currently on order include the *Basic Spotters Guide; Advanced Spotters Guide; Thunderstorms, Tornadoes and Lightning; Owlie Skywarn's Weather Book;* and *Winter Storms...the Deceptive Killers*. NWS anticipates these publications being back in stock by February.

Hurricanes...Unleashing Natures Fury and *Owlie*, our children's weather booklet, will be given updates in the coming fiscal year. The active 2004 hurricane season and the record breaking 2005 hurricane season necessitated updates to the hurricane publication. A new chapter on tsunamis is being added to *Owlie*. The updated edition of the Hurricane booklet should be done before the 2006 season. Look for the revised *Owlie* this summer. For a list of NWS awareness publications, go to http://www.weather.gov/os/brochures.shtml

To order copies of NWS publications, contact your local NWS Weather Forecast Office: http://www.stormready.noaa.gov/contact.htm. ❄

StormReady/TsunamiReady

StormReady Hits 1000, Welcomes 48th-49th States; Norfolk To Join TsunamiReady East Coast Sites

By Melody Magnus, Aware Editor
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In December, the success of the StormReady program was made brilliantly clear as the program welcomed its 1000th community. An announcement of the exact site will be released to the media before the formal event tentatively set for January. The 1000th community is located in the South, where the program started as a local venture in 1999. Stay tuned for more details about the official recognition site and ceremony.

The StormReady program was founded by NWS Tulsa, OK, Warning Coordination Meteorologist Steve Piltz. Steve believed emergency managers were an under-recognized and often underfunded group that needed support. He wanted to develop a program that would encourage communities and counties of all sizes and budgets to become accountable for their severe weather preparedness and also receive recognition for a job well done.

Steve understood the value of a program offering emergency managers formal recognition for their efforts to meet minimum safety standards. His idea developed into what is now StormReady. For more information on the program's history, go to http://www.stormready.noaa.gov/history.htm.

This program has evolved and expanded over the 6 years of its existence. It now includes the TsunamiReady program, with similar but different requirements for coastal communities at risk of a tsunami. A "Supporter" program was added in 2004 to recognize companies, schools, malls and other entities unable to meet full StormReady criteria, but committed to protecting its employees, customers, students and visitors.

Other program milestones met this fall include welcoming Delaware as the 48th state to take part in the StormReady program. The program welcomed all counties in Delaware and the city of Wilmington. Rhode Island joined in early December as the 49th state. Connecticut is expected to follow soon as the final state with a StormReady site. This winter, New York City is poised to become the program's largest StormReady community.

In May, the small resort town of Indian Harbour Beach, FL, became the first TsunamiReady community on the East Coast. Norfolk, VA, is expected to become the second East Coast TsunamiReady site in January.

Emergency Managers who want to learn more about the StormReady/TsunamiReady program should contact their local NWS warning coordination meteorologist for details. Find contact information by clicking on "Local Contacts" at http://www.stormready.noaa.gov. ❄

Interagency Earthquake and Tsunami Outreach in Aleutian Islands

By Audrey Rubel, Regional Communications Manager, NWS Alaska Region
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Bruce Turner, geophysicist at the West Coast/Alaska Tsunami Center (WC/ATWC), led an interagency team to one of the farthest corners of the U.S. to promote tsunami and earthquake safety. Unalaska, in the Aleutian Chain, is approximately 800 miles southwest of Anchorage. Unalaska is the 11th largest city in Alaska with just over 4,400 residents.

In addition to Bruce, the team consisted of Ervin Petty, Division of Homeland Security and Emergency Management; Jamie Roush, Seismic Institute at the University of Alaska; Benjamin Carr, American Red Cross; and Tom Murray, Alaska Volcano Observatory.

Shortly after arriving, Fire Officer Lt. Gary Gray escorted the team to the City Council chambers for a public forum with city employees. Murray provided a briefing on the volcanic hazards associated with nearby Makushin Volcano. Roush spoke to the community about the Alaska Earthquake Information Center, explaining the relationship between earthquakes and tsunamis. Bruce summarized the tsunami threat from the Aleutian megathrust, WC/ATWC operations, and the means whereby Unalaska would receive warning. Petty presented DHS&EM's role in mitigation, including signage. Carr discussed household readiness, emergency preparedness, and local volunteer training.

Ben Carr, American Red Cross, Speaks to Eagle's View, AK, Elementary School Students.

The team then visited local schools to increase awareness and assist with school evacuation plans. Police Chief Beasley, eight public safety personnel, and the harbormaster joined a TsunamiReady workshop, identifying key personnel and discussing communications methods. Before leaving, the group participated in a taped interview with the local media. ❄

Storm Prediction Center Plays Vital Role In Short Term Winter Weather Forecasting

By Jonathan Racy and Jared Guyer, Mesoscale Forecasters, Storm Prediction Center, Norman, OK
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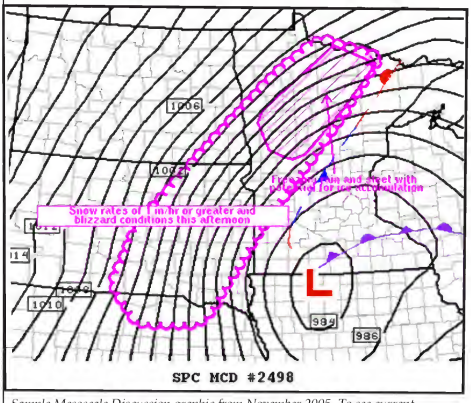
Based on initial success last winter, the NWS Storm Prediction Center (SPC) will continue to offer time-enhanced short-term winter weather guidance.

Last winter, when short-term hazardous winter weather impacted the continental United States, SPC issued Mesoscale Discussions (MD) four times daily between 00-01, 06-07, 12-13 and 18-19 UTC. The time-specific format allows users to schedule the product's inclusion in local forecasts and impact statements and to better use it to assess winter storms.



Sample Mesoscale Discussion graphic from November 2005. To see current discussions, go to http://spc.noaa.gov/products/md/

NWS and its partners gave the new format good reviews last winter. Winter weather MDs are issued from December 1 to February 28. SPC issues non-scheduled MDs as needed through the winter season or as conditions warrant.

To maintain an integrated suite of products, SPC is collaborating with the Hydrometeorological Prediction Center (HPC) and local WFOs at least twice daily to discuss hazardous winter weather concerns. The enhanced coordination will help create more accurate, unified and timely forecasts of hazardous winter weather across the United States.

SPC's winter weather program describes mesoscale processes contributing to heavy snow, significant icing and blizzard conditions up to 6 hours in advance. The MD provides forecast information on the what, when, where and why of the impending weather hazard. The first paragraph includes information on location, timing, expected rates, trends and mesoscale meteorological aspects of a hazardous winter weather event. The second paragraph explains the meteorological processes associated with the forecast, for example, Conditional Symmetric Instability, frontogenesis and isentropic lift. SPC also provides a graphic summarizing the forecast hazard and threat area, viewable on AWIPS and on SPC's website. Winter Weather MDs are written when SPC staff expect at least one of the following criteria to be met:

- Snowfall rates of at least 1 inch per hour lasting 2 hours or longer, at elevations below 4000 feet Mean Sea Level (MSL).

- Snowfall rates of at least 2 inches per hour for 2 hours or longer, at elevations between 4000 and 8000 feet above MSL, higher mountainous terrain or in lake effect areas.
- For freezing rain, when greater than five-hundredths of an inch is expected in a 3-hour period
- For spatial and temporal trends in precipitation type such as snow changing to freezing rain, rain changing to snow.
- For the initiation of mesoscale blizzard conditions (visibility less than 1/4 mile in snow/blowing snow and winds in excess of 35 mph, including non-precipitating ground blizzards) expected to last at least 3 hours.
- For climatologically rare winter precipitation situations, as might occur across the southern tier of the United States.

SPC welcomes input on the time-specific winter MD format. Email spc.feedback@noaa.gov. Comments will guide improvements to SPC's winter weather products. For more information, please visit the SPC website at: http://spc.noaa.gov/products/md/. ❄

NOHRSC Provides Advanced, Near Real-Time Snow Products for Nation

By Tom Carroll, National Operational Hydrologic Remote Sensing Center, Chanhassen, MN
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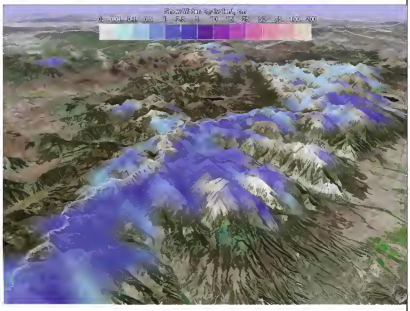
The NWS National Operational Hydrologic Remote Sensing Center (NOHRSC) in Chanhassen, MN, generates and distributes near real-time National Snow Analyses (NSA) for the lower 48 states. The NSA consists of a variety of snow products for the country, including web-based interactive map, time series, text discussion, alphanumeric and gridded formats. The NSA snow products include integrated estimates of:

- Snow water equivalent
- Snow depth
- Snowpack temperature
- Sublimation and condensation
- Snowmelt

The advanced NSA snow products integrate numerical weather prediction model forcings with available ground-based, airborne and satellite snow observations. NOHRSC generates NSA products hourly at 1km^2 spatial resolution for the country. In this way, NSA provides the "best estimate" of near real-time snowpack properties using available data.

NOHRSC also provides NSA data as ".kmz" files to view with KML interpreters such as Google Earth. Included are links to the NOHRSC NSA gridded snow products and point reporting station data sets for use by KML interpreters. All of the NSA products for the country are available in near real-time at http://www.nohrsc.noaa.gov. ❄



NOHRSC-estimated snow water equivalent over the Colorado Rocky Mountains integrates information from numerical weather models and all available ground, airborne and satellite snow observations. Interactive, 3D renditions of all NOHRSC NSA gridded snow products are available to end users from the NOHRSC website.

HPC Winter Weather Desk Provides New Products

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For several years, the Hydrometeorological Prediction Center (HPC) has led the NWS Winter Weather Experiment (WWE). HPC has provided model ensemble interpretation, advice and experimental products to an expanding list of NWS forecast offices. The program's success led to the creation of an HPC Winter Weather Desk (WWD) last winter.

The WWD issues operational probabilistic forecasts on receiving at least 4", 8", 12" of combined snow/sleet as well as .25" of freezing rain over the Contiguous US. In addition WWD provides prognostic discussions and surface low track forecasts. WFOs collaborate with the WWD through "12 Planet" chatware. Staff can initiate multiparty conference calls to coordinate forecast specifics. This coordination ensures consistency between snow accumulations issued by a WFO and those issued by the HPC.

This winter, WWD is providing several new products. Based on statistical inferences from the National Centers for Environmental Prediction (NCEP) Short Range Ensemble Forecast (SREF) system, WWD is providing probabilities of occurrence for the following impact parameters via an experimental website: http://www.hpc.ncep.noaa.gov/wwd/impactgraphics:

- Surface visibility (1/8, 1/4, 1/2 mi)
- Snowfall rate (inches/hr)
- Snowfall duration (12 hr, 24 hr, 48 hr)
- Accumulation on roads
- Freezing rain ($\geq$ .01 in)
- Blizzard criteria
- Exceeding winter storm event specific criteria
- Total accumulations for snow (and ice pellets) and freezing rain

Online Winter Awareness Resources

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For information on Winter Awareness brochures, booklets and state awareness event links, go to http://www.weather.gov/os/winter/. The page offers links to numerous billion dollar winter events, winter weather trends and NOAA Weather Radio All Hazards. ❄

Climate, Water and Weather Links

Aviation Weather:	aviationweather.noaa.gov/
Education/Outreach:	weather.gov/os/edures.htm
Flooding/Water:	weather.gov/os/water/index.shtml
Lightning Safety:	lightningsafety.noaa.gov/
Marine Weather:	weather.gov/os/marine/home.htm
MIC/WCM/SOO/DOH List:	weather.gov/os/wcm-soo.pdf
Natural Hazards Statistics:	weather.gov/os/hazstats.shtml
National Digital Forecast Database	weather.gov/ndfd/
NOAA Weather Radio Information:	weather.gov/nwr/
Past Weather/Climate:	lwf.ncdc.noaa.gov/oa/ncdc.html
Publications List:	weather.gov/os/pubslist.htm
StormReady Home Page:	stormready.noaa.gov/
Severe Weather Safety:	weather.gov/os/severeweather/index.shtml
Tsunami Information: NOAA/NWS	www.tsunami.gov